

QXS 12G System Release Notes

Caution: Quantum strongly recommends changing the default password for upgraded systems.

Product
These release notes are for the G280R009-02 firmware.

G280R009-02 is supported on the following Quantum QXS 12G systems:

- QXS-312 12G (12-Drive System)
- QXS-324 12G (24-Drive System)
- QXS-412 12G (12-Drive System)
- QXS-424 12G (24-Drive System)
- QXS-484 12G (84-Drive System)

Note: The G280R009-02 firmware does **not** support the following systems:

- QXS-3/4/6 6G hybrid systems
 - QXS-312/QXS-412 (12-Drive System)
 - QXS-324/QXS-424 (24-Drive System)
 - QXS-448 (48-Drive System)
 - QXS-456 (56-Drive System)
 - QXS-648 (48-Drive System)
 - QXS-656 (56-Drive System)
- StorNext QXS 6G systems:
 - QXS-1200 (12-Drive System)
 - QXS-2400 (24-Drive System)
 - QXS-5600 (56-Drive System)

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Operating Systems	RBOD Chassis
	Microsoft Windows Server:
	• 2019 • 2016 Hyper V • 2016
	SuSE Linux Enterprise Server:
	• 15 • 12 SP2
	VMware ESXi Server:
	• 6.7 U1 • 6.5 U2
	Red Hat Enterprise Linux:
	• 8.0 • 7.6
	JBOD Chassis
	Microsoft Windows Server:
	• 2019 • 2016
	Red Hat Enterprise Linux:
	• 7.6 • 6.10
	SuSE Linux Enterprise Server:
	• 12 •

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Description

This section provides the following description information:

- [G280R009-02 Firmware Release](#)
- [G280R006-02 Firmware Release](#)
- [G265R009 Firmware Release](#)

G280R009-02 Firmware Release

Note: The G280R009-02 firmware is a maintenance release for the QXS 12G systems.

The G280R009-02 firmware release is for the following Quantum QXS 12G systems:

- QXS-312 12G (12-Drive System)
- QXS-324 12G (24-Drive System)
- QXS-412 12G (12-Drive System)
- QXS-424 12G (24-Drive System)
- QXS-484 12G (84-Drive System)

The G280R009-02 firmware release is a maintenance release for the Quantum QXS 12G Series disk solutions. A variety of bug fixes are included in this release.

G280R006-02 Firmware Release

Note: The G280R006-02 firmware is a maintenance release for the QXS 12G systems.

The G280R006-02 firmware release is for the following Quantum QXS 12G systems:

- QXS-312 12G (12-Drive System)
- QXS-324 12G (24-Drive System)
- QXS-412 12G (12-Drive System)
- QXS-424 12G (24-Drive System)
- QXS-484 12G (84-Drive System)

The G280R006-02 firmware release is a maintenance release for the Quantum QXS 12G Series disk solutions. A variety of bug fixes are included in this release.

G265R009 Firmware Release

Note: The G265R009 firmware was the initial (new) release for the QXS 12G systems.

The G265R009 firmware release is for the following Quantum QXS 12G systems:

- QXS-312 12G (12-Drive System)
- QXS-324 12G (24-Drive System)
- QXS-412 12G (12-Drive System)
- QXS-424 12G (24-Drive System)
- QXS-484 12G (84-Drive System)

The G265R009 firmware release is a foundation release for the Quantum QXS 12G Series disk solutions. A variety of bug fixes were included as well as the new features and enhancements that allows for flexible choices on how to use the QXS 12G systems.

Enhancements and/or Features

This section provides the following recent enhancements and/or features information:

- [G280R009-02 Enhancements and/or Features](#)
- [G280R006-02 Enhancements and/or Features](#)
- [G265R009 Enhancements and/or Features](#)

G280R009-02 Enhancements and/or Features

- Enclosure Management port is now compliant with IEEE 802.1x network authentication protocol.
- Added Storage Controller capability to detect Field Accessible Reliability Metrics Specification time series log.
- Added support to invoke and monitor the Unified Data Service.
- Added Unified Data Service **set protocol** and **show protocol** commands.
- Changed the default scrub interval from 24 hours to 360 hours (15 days).
- Added support for collecting logs.
- Added support to collect drive logs for Field Accessible Reliability Metrics frames.
- Added capability to allow full resynchronization of replication sets at will.

G280R006-02 Enhancements and/or Features

Caution: Quantum strongly recommends changing the default password for upgraded systems.

The G280R009-02 firmware release is a maintenance release and has the following new enhancements and/or features.

- Removal of the default username named **default** and the default password for the default username of **!manage**. This applies **ONLY** to:
 - New QXS arrays with G280 code pre-installed
 - QXS arrays that have been re-imaged with G280 code

This has the following effects for new QXS arrays:

- a When accessing the CLI or the DMU (Disk Storage Management Utility GUI) for the first time, you will have to create a new user and password for the system. See the **QXS 12G Maintenance and Installation Guide**, the **QXS 12G CLI Reference Guide**, and the **QXS 12G Disk Management User Guide** for new CLI and GUI login procedures.
- b The “manage” and “monitor” roles will both be assigned to the first configured username created on the array.
- c You can no longer use default **username** and **!manage** password to access these storage arrays.

d If you use the Appliance Controller **qxarray** commands from the host StorNext system, you must use the username and password assigned to the system in order to use those commands, unless the system is running software where the **manage** username and **!manage** password were in place.

- Security of Connected devices
- Security Vulnerability Scan (Appscan and Nessus) as part of code qualification
- USGv6 cert for Data path and Management path
- Adds Win 2019 for General Market plus latest version OS level updates
- G280R009-02 firmware release aligns the overall customer base to the 'G275xxxx' code base from the 'G265xxxx' code base
- Maintains the functionality pre-existing in G265xxxx and provides unified code support
- All G265xxxx fixes ported to G275xxxx base
- Inherits improvements put into G275xxxx (ADAPT sequential write performance enhancement)
- Incorporate One-Button-Config (OBC) profiles for the 5U84 system

G265R009 Enhancements and/or Features

The enhancements and/or features for G265R009 include:

- Added the ADAPT data protection level for linear and virtual disk groups. This feature provides:
 - Maximizes flexibility
 - Provides built-in spare capacity
 - Allows for very fast rebuilds, large storage pools, and simplified expansion
- Added support for 5U84 controller and expansion enclosures (a 5U chassis containing up to 84 disks).

Note: A storage system can have up to three 5U84 expansion chassis.

- Added a JSON API output option to the CLI.
- Increased the maximum virtual pool size per controller module to 1 PiB, with the large-pools feature enabled.
- In the disk management utility (V3 GUI), introduced a guided-setup interface to speed initial configuration and provisioning of the storage system.
- Re-enabled support for SMI-S for storage systems with 2U enclosures only.
- Re-enabled Microsoft VSS support through use of the Seagate VSS Hardware Provider.
- Drive spin-down can be scheduled for linear disk groups and disks not in a disk group.

- For virtual storage, increased performance to 600K IOPS for 5005 systems and to 300K IOPS for 4005 systems.
- Added an option to enable/disable CHAP in the Disk Management Utility Configure CHAP panel.
- Added new virtual-pool statistics to CLI API output. These statistics include:
 - Page allocations/deallocations
 - Page maps/unmaps
 - Hot/cold page moves
 - Blocked SSD promotions

Recent Fixes

This section contains the following recent fixes:

- [G280R009-02 Fixes](#)
- [G280R006-02 Fixes](#)
- [G265R009 Fixes](#)

G280R009-02 Fixes

The fixes for the G280R009-02 firmware release include:

Note: This list is the key customer-reported fix list. Other fixes, not described, are included in this release.

- Developed Unified System Management (USM) Upgrade Toolkit for 5U84 and 2U12/2U24 JBODs.
- Fixed an issue where both controllers crashed after controller B was brought back up while deleting a volume.
- Fixed an issue where a dual controller crashed during the disaster reverse recovery operation, done using **kill/unkill** commands on the system.
- Fixed an issue where clear expander-status fails to clear expander-status for 5U84 enclosure.
- Fixed an issue where a crash happened due to a timeout detected by the auto stall recovery code during the shutdown/reboot test.
- This issue happened when couple of disks become bad during the shutdown/reboot test, due to which the disk group got quarantined, and one of the controllers detected a 'shutdown stall' for the other controller.
- Fixed an issue where the wrong disk was being failed during a bad-block recovery.
- Fixed an issue of offline disk groups remaining quarantined even after the controller was live.
- Implemented a salvage mode for field recovery red-alerts.

- Fixed issue of reading incorrect enclosure configuration page and swapping of incorrect enclosure configurations, when the system is busy in SCSI rescanning.
- Fixed an issue of controller crash due to heartbeat loss.
- Fixed the wrong reporting where power supply failure reported capacitor failure.
- Fixed an improper system request for a "Performance Tier" license after upgrade to G280R002-03.
- Fixed an issue in the WBI where the Create Snapshot scheduler did not correctly convert AM/PM schedules (12-hour time format) to 24-hour time format.
- Fixed an issue where the controller crashed while deleting read-cache disk group.
- Fixed an issue where a user could successfully upload an expired certificate and install it to the array.
- Added the ability to retrieve UDS and SM2 logs from the storage system without removing the disks. The logs can be retrieved using the **get logs** command or the ftp command.
- Fixed an issue where, after firmware update, power supply firmware and VPD versions were not updated in the output of the CLI **show versions frus** command.
- Fixed an issue where disk scrub was being attempted on FDE locked disks, causing them to be marked as "Leftover".
- Fixed an issue where the replaced controller's IP address changed back to the controller's old IP address after enclosure power cycle or shutdown restart of both controllers.
- Deprecated no-mirror cache optimization mode.
- Global spare drive now gets selected by slot affinity and gets added as disk group spare.
- Fixed the nested topology change issue.
- Fixed issues where error detected in scrub caused controller to get killed.
- The complete debug region memory buffer can now be used to extract disk logs.
- Fixed self assert in case of compact flash diagnostic failure during boot.
- QXS storage systems now implement mechanism of self-detection of multi boot failure and avoids a re-boot.
- For ADAPT disk groups, fixed an issue where disks that were not used in an expand operation were associated with the disk group during rebalance operation.
- Made interprocessor communication (IPC) path changes to handle multi-context invocation and incorrect error address reporting.
- Fixed an issue where after upgrading to GN280R002-03/GT280R002-03, system is asking for a "Performance Tier" license.

- Fixed an issue where it was not possible to unlock FDE disk after using the **set fde-state repurpose** command.
- Fixed an issue where while using WBI, it was not possible to set the SMTP server name if the domain suffix was more than 6 characters long.
- Fixed an issue where while receiving traps on MIB browser it was displaying IP address of a different controller rather than the address of the controller on which it was configured.
- Fixed an issue where the FDE passphrase was not masked in the GUI.
- Fixed a large memory leak in root platform.
- Fixed an error where the shared library libz.so was not loaded correctly.
- Fixed an issue of flooding of logs due to repeated SCSI enclosure services (SES) page 2 control requests.
- Fixed an issue where the virtual pool went offline due to unreadable metadata.
- Fixed GEM CLI **ddump_pwrmgr** to show correct power cooling module / powersupply unit serial no.
- Fixed disk-zone distribution among stripe zones in ADAPT rebalance after disk replacement.
- Fixed a race condition that happened between task management function (TMF) sent and the TMF aborted.
- Fixed issue where a disk-group initialization failure and then a scrub abort on the same disk group caused the disk group to go offline.
- Fixed the issue of data corruption that happened during adapt target rebuild and rescan.
- Implemented security enhancements.

G280R006-02 Fixes

The fixes for the G280R006-02 firmware release include:

Note: This list is the key customer-reported fix list. Other fixes, not described, are included in this release.

G280R006-02 Fixes

Bug	Description
512681	Controller A going Up and Down

G265R009 Fixes

The fixes for G265R009 firmware release include:

Note: This list is the key customer-reported fix list. Other fixes, not described, are included in this release.

- Fixed strings that were not translated in the Disk Management Utility, CLI, and event messages.

- Fixed an issue where, in the Disk Management Utility when mapping a volume to a host or host group on a hybrid FC/iSCSI controller, all four host ports were selected by default despite the configured host protocol.
- Fixed alignment issues that existed when using the German locale in the Disk Management Utility.
- Fixed an issue where remapping host ports caused LUN IDs to be reset.
- Fixed an issue where trying to modify a peer with the remote address of a system for which the peer already exists displayed the unintuitive error message **Error: Cannot find peer connection in the remote system.**
- Fixed an issue where a PFU script failed with error **XML Parse Failed.**
- Fixed an issue where the Disk Management Utility did not use a string to indicate "no host" for an initiator
- Removed linear-storage references from event messages for storage systems that support only virtual storage.
- In the CLI, improved the message shown after successfully renaming a volume group.
- The confirmation message received in the Disk Management Utility's Configuration Wizard did not clearly indicate which services will be disabled when notifying the user that disabling an interface will disable the interface.
- Fixed an issue where, when a user name with maximum character length was logged in, the session time information was not displayed in the Disk Management Utility's Home topic.
- Changed help to specify that volume-groups can only include volumes that are in the same pool.
- Fixed an issue that could cause a code load failure to occur, especially with one controller module in the system.
- Fixed an issue where disks were left in an available or leftover state after a disk group was pulled from one system and inserted into a different system that is running.
- Fixed an issue where an FTP session terminated during code load.
- Fixed an issue where, after a code load from the Disk Management Utility, the old version of code was still shown.
- Changed the firmware so that if an unsupported (OneStor) expansion enclosure is attached to the system, the enclosure status is shown as Unsupported in CLI API output.
- Fixed an issue where reversed logic for reporting virtual disk-group removal status displayed a confusing message. When the disk group was OK to remove, the message said not OK to remove, and vice versa.
- Fixed an issue where the CLI show sas-link-health command incorrectly showed the expansion port status Up even when the cable is unplugged from the controller.
- Fixed an issue where, after a test of pulling all host cables from both systems during replication, the replication state for the local system went to resume state but on the other system it went to suspended state in the Disk

Management Utility. Similarly, the peer connection health status showed OK on one system and Faulty on the other system.

- Fixed an issue that could cause a controller to crash while running snapshot schedules.
- Fixed an issue where, in the Disk Management Utility's System topic, information disappeared after removing a disk.
- Fixed an issue where, while running a heavy virtual replication load, and attempting a code load, the Management Controller crashed.
- Fixed an issue where the following messages appeared while loading code:

```
Firmware Bundle - Transfer completed.  
Please wait...  
Please wait...  
Please wait...  
Please wait...  
Please wait...  
Please wait...  
Timed out waiting for partner to connect.  
No reboot required  
RETURN_CODE: 10
```

- Fixed an issue where the following messages appeared while loading code:

```
The code load failed but the MC was restarted:  
System health check failed.  
*** Code Load Fail. ***  
STATUS: *** Code Load Fail. ***  
Restarting Management Controller...  
RETURN_CODE: 10
```

- Removed the CLI **set cli-parameters** command's xml option, which was not documented.
- Fixed an issue where, in the Disk Management Utility's Replications topic, hovering on a replication set name did not display replication progress.
- Fixed an issue where, after loading the same firmware bundle onto a system with PFU enabled, the Disk Management Utility reported a successful code load process but then showed "Firmware upgrade failed."
- Fixed an issue where, after starting a firmware downgrade using FTP, SNMP trap event 237 reported System health is insufficient to support firmware update yet the FTP health state passed and code load continued.
- Fixed the Fan and Power Supply FRU status for Warning and Resolved events.
- Fixed an issue where code load failed with error message: Code Load Rejected. Does not appear to be a bundle at all.

- Fixed an issue where during code load the Management Controller experienced a Kernel panic: Oops - BUG: 0 [#1]
- Fixed an issue where, in the Disk Management Utility, informational events that indicate a fault has been resolved were shown without a severity icon.
- Fixed an issue where auto-deletion of eligible snapshots stopped working, and new snapshots could not be created until the snapshot space limit was increased.
- Fixed an issue where initiating code load while a code load is in progress didn't return the correct message—instead it returned: Could not determine if there is an activity in progress on this system.
- Fixed an issue where code load failed while getting logs, resulting in incorrect firmware image being loaded.
- Fixed an issue where a controller crashed while loading code on a system configured to use virtual replication.
- Fixed an issue where firmware download was interrupted due to loss of power to controller or Storage Controller restart, which resulted in an incorrect firmware image being loaded due to a later timestamp on the interrupted bundle.
- Fixed an issue where, in the Disk Management Utility's Map panel, using filters caused the Next and Previous arrow buttons to become obscured.
- Fixed an issue where, while pulling logs via FTP or the Disk Management Utility, an error message stated that logs can't be pulled because a code load is in progress.
- Attempting to log in through Telnet (if enabled) while a code load is in progress caused the Management Controller to display the message:

```
/home/appuser/appshell: source: line 69: can't open '/app/
etc/app.env'. It remains necessary to wait until the code
load is complete before logging in, but the message has
been corrected to: Login unavailable. Please try again
later.
```

- Fixed an issue where in management interfaces, FRU data was not available for a power supply.
- Changed events 39, 40, 307, 469, 476, 477, and 524 to specify that the operating temperature range for a controller enclosure is 5–35°C (41–95°F) and for an expansion enclosure is 5–40°C (41–104°F).
- Fixed an issue that prevented using the Disk Management Utility to switch from static to DHCP addressing for the management port, in single controller mode.

Supported Configurations

This section provides the QXS 12G supported configurations. [Table 1](#) provides the RAID chassis system, drive form factor per chassis, and the number of expansion chassis supported in a RAID chassis and expansion chassis combination using the G280R009-02 firmware:

Table 1 QXS-312/324/412/424/484 RAID Chassis with Supported Expansion Chassis

Drive Expansion Chassis	QXS-312 12G RAID Chassis Attach	QXS-412 12G RAID Chassis Attach	QXS-324 12G RAID Chassis Attach	QXS-424 12G RAID Chassis Attach	QXS-484 12G RAID Chassis Attach
Drive Form Factor Per Chassis	12-drives (3.5" LFF)	12-drives (3.5" LFF)	24-drives (2.5" SFF)	24-drives (2.5" SFF)	84-drives (2.5" SFF or 3.5" LFF)
2U12 Expansion Chassis	Up to 3	Up to 9	Up to 3	Up to 9	N/A
2U24 Expansion Chassis	Up to 3	Up to 9	Up to 3	Up to 9	N/A
5U84 Expansion Chassis	N/A	Up to 3	N/A	Up to 3	Up to 3
Intermix 2U Expansion Chassis	Up to 3	Up to 9	Up to 3	Up to 9	N/A

Note: The 2U12 and 2U24 expansion chassis can be intermixed. However, mixing the 2U12/2U24 expansion chassis and 5U expansion chassis is not supported.

Note: If you have supported and/or unsupported configuration questions, refer to the "table" on page 1 and/or see [Contacting Quantum](#) on page 27 to contact Services and support.

Firmware Notes

Caution: Reverting to a previous firmware version is not recommended. Notify Quantum support for additional information.

Always update controller firmware to the latest when:

- Installing a new system
- Adding expansion chassis
- Replacing a controller I/O module(s) or expansion I/O module(s)

Note: Updating controller firmware with expansion I/O modules active ensures that the controller firmware and expansion I/O module(s) firmware are at a compatible level.

Before Installing Firmware

Complete the following before installing firmware:

- Create a backup of system data (a full backup is strongly recommended).
 - Schedule an appropriate time to install the firmware:
 - For single domain systems, I/O operations must be halted.
 - For dual domain systems, because the online firmware upgrade is performed while host I/Os are being processed, I/O load can impact the upgrade process.
 - Select a period of low I/O activity to ensure the upgrade completes as quickly as possible and avoid disruptions to hosts and applications due to timeouts.
- Allocate sufficient time for the update:
- It takes approximately 45 minutes for the firmware to load and for the automatic restart to complete on the first controller module.
 - When dual modules are installed, the full process time is approximately 90 minutes.
 - If cascaded drive enclosures are also being updated, the total process time may be as long as 180 minutes.
- Set the Partner Firmware Update option so that, in dual-controller systems, both controllers are updated.
 - When the Partner Firmware Update option is enabled, after the installation process completes and restarts the first controller, the system automatically installs the firmware and restarts the second controller.
 - If Partner Firmware Update is disabled, after updating software on one controller, you must manually update the second controller.

During Installation Process

Monitor the system display during firmware installation to:

- Determine update status
- See when the update is complete

After Installation is Complete

After the installation process is complete and all systems have automatically restarted:

- Verify system status in the disk management utility, and confirm that the new firmware version is listed as installed.
- Review system event logs.

- Updating array controller firmware may result in new event messages that are not described in earlier versions of documentation.
- For comprehensive event message documentation, see the most current version of the Event Descriptions Reference Guide.

Additional FW Notes

The firmware notes include the following:

- Windows Server 2012 management integration:
 - Quantum recommends that you update the Windows cache by using the cmdlet **Update-StorageProviderCache -DiscoveryLevel Full -Name <storageProviderName>** manually, after attempting any storage provision operations that use the QXS management interface (Disk Storage Management Utility or the Command Line Interface).
 - Quantum recommends that you use the QXS management interface to modify volume mappings, delete volumes, or modify volume names. Manually update Windows cache by using the cmdlet **Update-StorageProviderCache -DiscoveryLevel Full -Name <storageProviderName>**.
- System Center VMM integration:
 - Running operations concurrently is supported, except for Windows 2008 R2, up to the limit of four concurrent operations. This includes creating objects (e.g., LUNs, clones, snapshots) and registering objects to hosts or four node clusters.
- Windows Server 2012 management and System Center VMM integration:
 - Quantum recommends that you disable Windows Indication subscription, if SCVMM or Windows Server 2012 manages only QXS systems and not any other arrays. To disable the Indication subscription, modify the registry key
HKEY_LOCAL_MACHINE\Software\Microsoft\Windows\CurrentVersion\Storage Management\EnableIndications value from 1 to 0 and restart Windows Standards Based Storage Management Service.
 - If you want to enable the Indication subscription at Windows Server 2012, Quantum recommends that you configure the Indication based on the instructions provided at <http://blogs.technet.com/b/filecab/archive/2013/05/22/using-indications-with-the-windows-standards-based-storage-management-service-smi-s.aspx>.
- The QXS contains an embedded SMI-S provider for use by SMI-S client applications. The embedded provider is designed to support QXS configurations with up to 24 hard drives and up to 250 mapping paths. A mapping path is defined as an QXS volume presented through an QXS target port to a host initiator.
- When using Windows Dynamic Disk (software RAID) on top of a hardware RAID, cautions must be considered. For more information, see the section “Real World: Dynamic versus Basic Disks” on the topic at <http://technet.microsoft.com/en-us/library/dd163558.aspx>.

- Failover and failback times are affected by the number of system volumes; the more volumes there are on the system, the more time is required for failover and failback to complete.

Firmware Installation Instructions

This section describes how to install the firmware.

WARNING: Do not cycle power or restart devices during a firmware update. If the update is interrupted or there is a power failure, the module could become inoperative. If this occurs, contact technical support. The module may need to be returned to the factory for re-programming.

Caution: Before upgrading firmware, ensure that the system is stable and is not being reconfigured or changed in any way. If changes are in progress, monitor them and wait until they are completed before proceeding with the upgrade.

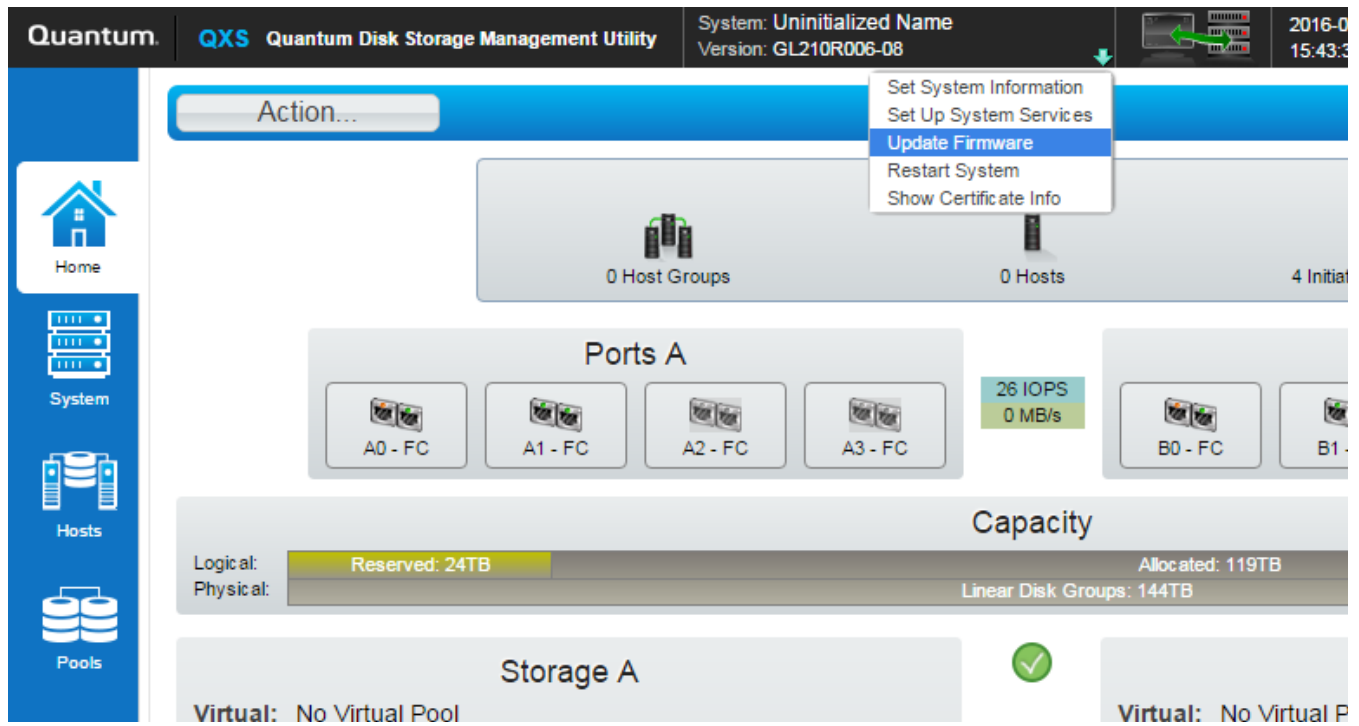
IMPORTANT: In dual-module enclosures, both controllers or both I/O modules must have the same firmware version installed. Running different firmware versions on installed modules may cause unexpected results.

Install Firmware Using Disk Management Utility V3

Follow these steps to install the firmware package using Disk Management Utility:

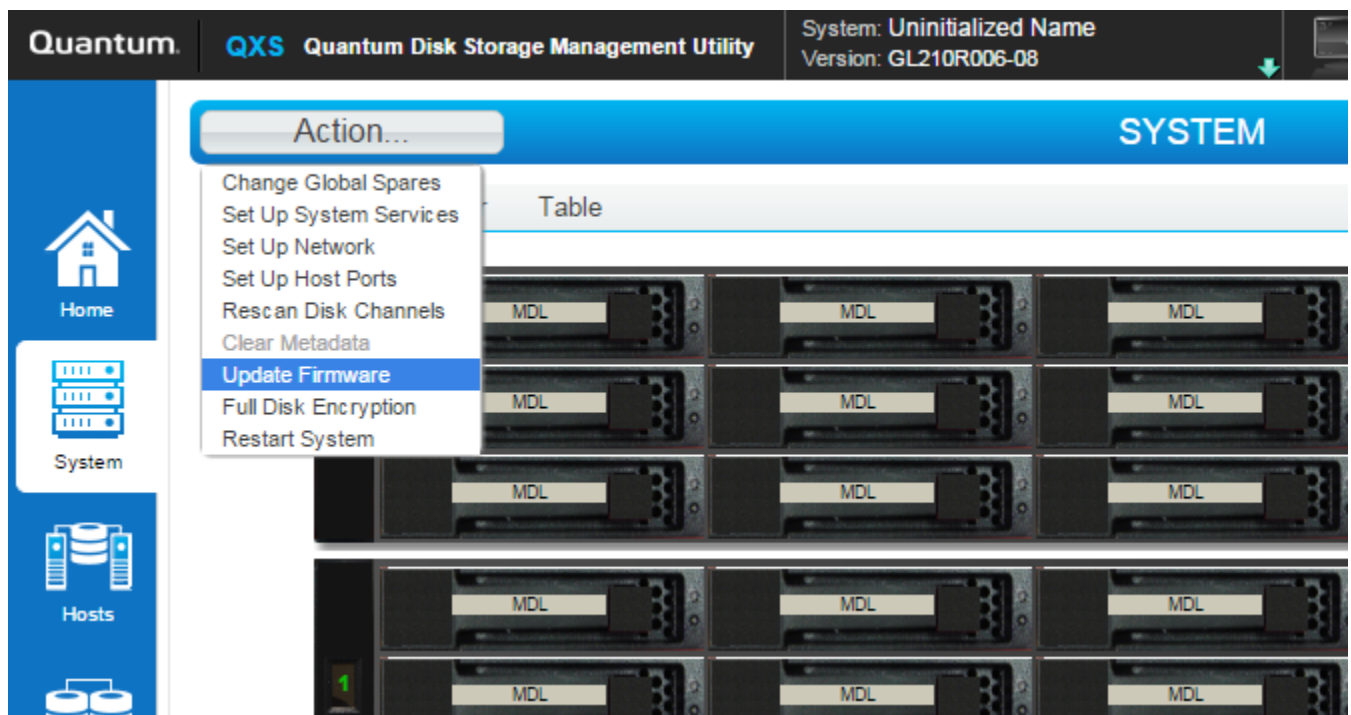
- 1 Obtain the firmware package, and save it to a temporary directory. This firmware release can be obtained by contacting Quantum Technical Support.
- 2 Locate the firmware file in the downloaded/extracted folder. The firmware filename is in the following format: GxxxRyyy-zz.bin.
- 3 In single-domain environments, stop all I/O to vdisks in the enclosure before starting the firmware update.
- 4 Log in to Disk Storage Management Utility.
- 5 Go to the Update Firmware option. There are two ways to do this:
 - a On the top of the home screen ([Figure 1](#)), click the first arrow on the upper right where the System name and Version are shown. Click Update Firmware.

Figure 1 Sample Home Screen



- b Click the System tab on the left navigation panel (Figure 2), click the Action button at the top of the system panel, and click Update Firmware.

Figure 2 Sample System Screen



Note: With either of these methods, the panel displayed contains a table that shows the currently installed firmware versions.

- 6 Click **Browse**, and select the firmware file to install.
- 7 Click **OK** to install the Controller-Module Firmware File.
- 8 Wait for the installation to complete. During installation, each updated module automatically restarts.
- 9 In the Disk Storage Management Utility display, verify that the expected firmware version is installed on each module.

Installing Firmware Using FTP

Follow these steps to install the firmware package using FTP:

- 1 Obtain the firmware package, and save it to a temporary directory. This firmware release can be obtained by contacting Quantum Technical Support.
- 2 Locate the firmware file in the downloaded/extracted folder. The firmware filename is in the following format: GxxxRyyy-zz.bin.
- 3 Using Disk Storage Management Utility, prepare to use the FTP:
 - a Determine the network-port IP addresses of system controllers.
 - b Verify that the system FTP service is enabled.
 - c Verify that the user login has permission to use the FTP interface and has manage access rights.
- 4 In single-domain environments, stop I/O to vdisks in the enclosure before starting the firmware update.
- 5 Open a command prompt (Windows) or a terminal window (UNIX), and navigate to the directory containing the firmware file to load.
 - a Enter a command with the following syntax:
`ftp <controller-network-address>`. (For example: `ftp 10.1.0.9`)
 - b Log in as an FTP user (user = **ftp**, password = **!ftp**).
 - c Enter a command by using the following syntax:
`put <firmware-file> flash`
where **<firmware-file>** represents the binary firmware filename
- 6 Wait for the installation to complete. During installation, each updated module automatically restarts.
- 7 If needed, repeat these steps to load the firmware on additional modules.
- 8 Quit the FTP session.
- 9 Verify that the expected firmware version is installed on each module.
 - In Disk Storage Management Utility, right-click the system in the **Configuration View** panel, and then select **Tools > Update Firmware**.
 - In the Command Line Interface (CLI), execute the **show version** or the **show enclosures** command.

Installation Troubleshooting

If you experience issues during the installation process, do the following:

- 1 When viewing system version information In the Disk Storage Management Utility System Overview panel, if significantly more than an hour has elapsed and the components do not show that they were updated to the new firmware version, refresh the browser. If version information is still incorrect, proceed to the next troubleshooting step.
- 2 If version information does not show that the new firmware has been installed, even after refreshing the browser, restart all system controllers. For example, in the CLI, enter the **restart mc both** command. After the controllers have restarted, one of three things happens:
 - Updated system version information is displayed, and the new firmware version shows that it was installed.
 - The Partner Firmware Update process automatically begins and installs the firmware on the second controller. When complete, the versions should be correct.
 - System version information is still incorrect. If system version information is still incorrect, proceed to the next troubleshooting step.
- 3 Verify that all system controllers are operating properly. For example, in the CLI, enter the **show disks** command, and read the display to confirm that the displayed information is correct.
 - If the **show disks** command fails to display the disks correctly, communications within the controller have failed. To re-establish communication, cycle power on the system, and repeat the show disks command. (Do not restart the controllers; cycle power on the controller enclosure.)
 - If the **show disks** command from all controllers is successful, perform the Firmware Update Process again.

Known Issues and Workarounds

This section contains the following known issues and workarounds.

- [G280R009-02 Known Issues and Workarounds](#)
- [G280R006-02 Known Issues and Workarounds](#)
- [G265R009 Known Issues and Workarounds](#)

G280R009-02 Known Issues and Workarounds

The G280R009-02 firmware known issues and workarounds are:

G280R009-02 Known Issue	Workaround
Controller A crashed during a controller pull/push operation.	None. This is a rare occurrence.
The Disk Management Utility error message (schedule was not found) is not appropriate while modifying/expanding the size of a volume.	Use the CLI.
SSD disk groups can be created without a Performance Tier license.	None.
Incorrect queue depth values are displayed for historical performance statistics.	None.
The maximum volume size limit for an ADAPT virtual or linear disk group is 1 PiB ; for a non-ADAPT virtual disk group it is 128 TiB; and for a non-ADAPT linear disk group the maximum size is limited only by the size and capacity of member disks.	None.
When the drive spin down feature is enabled, it is not possible to unlock the FDE drives.	Disable the drive spin down feature and wait for approximately 2-3 minutes, and perform a manual rescan. Once the drives spin up, the system can be unlocked by entering the FDE passphrase.
The Management Controllers reboot in a loop after creating a monthly snapshot schedule.	While creating a scheduled snapshot, clear the Repeat every checkbox.
One controller crashes during repetitive drive pull and insertion on RAID 10 disk group.	None.
A disk detected timeout when you do a repetitive shutdown, restart with adapt reconstruction and manual rescan.	None.

G280R009-02 Known Issue	Workaround
When using the QXS Disk Management Utility to replace a disk, the health panel does not correctly reflect the LED status of the disks until the disk group rebuild starts. Any amber LEDs illuminated on the disks are not shown as illuminated in the health panel.	The health panel is updated after the disk group is rebuilt.
In the Storage Management Console and when using the CLI set chap-record command, the secret and mutual-secret parameters accept the entry of a double-quote character ("), which is an invalid character.	If a double-quote character was included in the secret or mutual-secret parameter, remove it and re-create those entries.
When creating a username during initial CLI login, the following invalid characters are allowed in the username: angle brackets (< >) and single quote (').	Re-create the username without using angle brackets (< >) and single quote (').

G280R006-02 Known Issues and Workarounds

There are no known issues for the G280R006-02 firmware.

G265R009 Known Issues and Workarounds

The G265R009 firmware known issues and workarounds are:

G265R009 Known Issue	Workaround
RAID write errors occur and message RAID had write error appears in the event log.	None, but rebooting the Storage Controllers one at a time will clear the write errors from the system.
If Telnet is enabled, the Telnet session to a controller may drop for no reason.	Attempt to restart the Telnet session. If not successful, restart the Management Controller from the partner controller.
A controller's management port stops working.	Restart the affected controller's Management Controller from the partner controller.
Some strings are not translated in the Disk Management Utility and in event messages.	Use a translation service, such as Google Translate, to translate unknown English words into the preferred language.
In the Disk Management Utility, forward slash characters (/) in name fields are replaced with spaces.	Locations or other names that require the use of a forward slash should be entered via the CLI.
When replication peers are in different time zones, incorrect values are shown for replication Start Time and Estimated Completion Time.	Restart the Storage Controller that shows the incorrect time.

G265R009 Known Issue	Workaround
The CLI create snapshot command does not handle listing multiple volume or snapshot names that are enclosed in quotes, if any of the names contain a space.	Run the command separately for a volume or snapshot whose name includes a space.
During Storage Controller reboot, a decompression issue extends boot time by a few seconds.	None
In the Disk Management Utility, when using Google Chrome, the Turn off LED button in the System topic does not work.	Use a different browser.
The CLI reset disk-group-statistics command does not reset the counters for the disk groups.	The counter for disk group statistics can be reset using the reset all-statistics command.
The CLI show snapshots command may display an incorrect unique-data value. After taking a snapshot of an existing snapshot, the unique-data value will be reset to 0. Despite this, the show snapshot-space command will show the allocated space correctly.	None
In the Disk Management Utility, after changing the host port mode from iSCSI to FC, the "replicate now" and "replication set status" fields show incorrect status during replication.	Stop replication before changing the host port mode.
Cannot delete more than 50 volume groups at a time in the Disk Management Utility or the CLI.	Delete up to 50 volume groups, then delete the remainder.
In the Disk Management Utility, when performing a complete tear-down of volumes where you're deleting a volume group and select a check box to delete all the volumes in the group, the volumes are not deleted and the operation fails with error "unable to delete the volume as the volume is part of volume group" but the volume group is not identified.	Perform a rescan to repopulate the internal system with fresh data, and then rerun the command.
In the Disk Management Utility, when I/O is in progress, a failed or removed controller causes the aggregate IOPS and MB/s fields in the Home topic to display 0 values. When the controller is reinstalled, proper values appear.	Both controllers must be present and active for the values to appear again.
A replication set was not created correctly but the secondary volume was created on the peer system. Replications cannot run if there is no replication set between the primary and secondary volumes.	None. To remove the secondary volume, contact support.
In the Disk Management Utility, the Temporary License tab mentions Dot Hill in the End User License Agreement.	None
The CLI show power-supplies command does not display the firmware revision.	Use the show configuration command.

G265R009 Known Issue	Workaround
In the Disk Management Utility's Manage Schedules panel, the last scheduled task that was deleted is not grayed out.	Refresh the browser.
In the Disk Management Utility's User Management panel, if you try to create a user with a name that already exists, an error message will appear. If you then toggle the SNMPv3 setting the error message will be cleared.	When the Apply button is grayed out, check whether the name is already in use.
The "Manage" and "Monitor" labels for roles are not consistently translated in the Disk Management Utility.	None
When using Microsoft Edge, Disk Management Utility help text doesn't appear.	This is due to a Microsoft Edge issue. Use a different browser.
In the Disk Management Utility, an error message does not immediate appear when a user enters invalid characters in the domain name of the e-mail parameters fields of the Setup Notifications dialog.	None; the user is informed of the invalid characters when the user clicks Apply.
In the Disk Management Utility, SNMPv3 user authentication passwords do not accept special characters.	Use the CLI set user command instead.
After restarting one of the controllers, the show disks perf command shows incorrect data for disks that are not part of a disk group and have no jobs running on them.	Ensure both controllers are operating and re-run the command.
In the Disk Management Utility, when deleting a schedule, a success message will appear but the schedule may remain listed in the Manage Schedules panel. Trying to delete the schedule again will result in error Unable to delete schedule. The schedule was not found.	Refresh the browser.
If the user attempts to create a disk group with a name that contains the lowercase string "dga", and if the index ID matches, the command will fail.	Do not create a disk group with a name that contains the lowercase string "dga".
While creating a peer connection, the new peer connection is not shown in the secondary system's Disk Management Utility until it is refreshed.	Refresh the browser on the secondary system or use the CLI.
A single controller crashed during scheduled replication.	None needed. The controller automatically recovers immediately after the crash without user intervention.
Replication set status differs in the primary and secondary systems during scheduled replication. The replication set status shows "Ready" for the secondary system and "Running" for the primary system, which is incorrect.	If this condition persists, manually abort the replication and restart it. Any queued replication will start after the abort.

G265R009 Known Issue	Workaround
Sometimes the Management Controller is not ready for an extended period of time after controller is rebooted.	Wait until the Management Controller restarts and becomes available.
Customer sees an Expander Controller code-load failure signal and the controller reports that it has an invalid bundle.	Reinstall the firmware bundle.
In a Chrome browser the Disk Management Utility fails to load. It will show as "Loading" until it times out.	A 60-second timeout has been implemented. Refresh the browser after the timeout.
Verify operation returns false success message and success event for Adapt disk group even though Verify operation is not supported on Adapt disk group.	Ignore the false return of success event for an ADAPT disk group.
In a dual-controller system in which SFTP protocol is enabled, after replacing a controller module with one having down-level firmware, SFTP may be disabled on the new controller.	Enable the SFTP protocol on the new controller.
A scrub error is detected on unallocated pages.	Perform the Scrub procedure manually to fix the parity errors.
In the Disk Management Utility, the rear-view image of an expansion module shows the center port having a blue label instead of a yellow label.	None
When PFU is in progress, a system may temporarily report disk channel events on the controller being updated. These are not an indication of disk or I/O failures, and the events will subside after code load has completed.	None. Wait for code load to complete.
Linear RAID-5 expand disk-group operation will begin but will fail with error: Failed to expand disk group. Invalid disk(s) were specified.	Ensure that all disks used in the expand operation have the same protection-information (PI) format as the disk-group members. A disk's PI format can be found in the XML output of the CLI show disks command.
The Disk Management Utility has an option to copy a volume from linear to virtual, which is not supported.	None. Ignore the option.
When connected to an x3650 host with a Lenovo N2225 HBA and SLES 12 SP1, after manually stopping I/O one 5U84 JBOD is no longer displayed. (This is only a reporting issue; I/O is not interrupted.)	Power cycle the enclosure.
The GEM driveinv command does not list the temperature of all the disks in a 5U84 JBOD. (This is only a reporting issue; an overtemperature condition will still be handled by the firmware and fault status will be reported in SES, but will not be device specific.)	None

G265R009 Known Issue	Workaround
Cannot see all disks after a 5U84 JBOD is power cycled when connected to a 930-8e HBA (MegaRAID).	Follow the documented power sequence of powering up the expansion enclosure first, then the server with the 930-8e HBA.

Calculating Maximum IQN Name Length

When using explicit LUN mapping and you must shorten the IQN name on the nodes, use this procedure.

The following formula is used to calculate the maximum IQN name length, based on the number of hosts being explicitly mapped to a LUN on the array:

$$\text{Maximum IQN Character Length} = (4083 / n) - 7$$

Where n = number of hosts nodes explicitly mapped to a LUN on the array.)

Note: By specification, 223 is the maximum IQN length allowed.

[Table 1](#) on page 25 provides the calculated values based on the number of hosts being explicitly mapped to a LUN on the array:

Note: The table headings identify the following information:

of Hosts = Number of hosts explicitly mapped to a LUN
Max IQN = Maximum IQN Character Length

Table 1 Calculated Values for Hosts

# of Hosts	Max IQN	# of Hosts	Max IQN	# of Hosts	Max IQN
1-17	223	33	116	49	76
18	219	34	113	50	74
19	207	35	109	51	73
20	197	36	106	52	71
21	187	37	103	53	70
22	178	38	100	54	68
23	170	39	97	55	67
24	163	40	95	56	65
25	156	41	92	57	64
26	150	42	90	58	63

# of Hosts	Max IQN	# of Hosts	Max IQN	# of Hosts	Max IQN
27	144	43	87	59	62
28	138	44	85	60	61
29	133	45	83	61	59
30	129	46	81	62	58
31	124	47	79	63	57
32	120	48	78	64	56

Contacting Quantum

More information about this product is available on the Service and Support website at <http://www.quantum.com/ServiceandSupport/Index.aspx>. The Service and Support Website contains a collection of information, including answers to frequently asked questions (FAQs). You can also access software, firmware, and drivers through this site.

For further assistance, or if training is desired, contact the Quantum Customer Support Center:

United States	1-800-284-5101 (toll free) +1-720-249-5700
EMEA	+800-7826-8888 (toll free) +49-6131-3241-1164
APAC	+800-7826-8887 (toll free) +603-7953-3010

For worldwide support:

<http://www.quantum.com/ServiceandSupport/Index.aspx>
